



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,159	09/24/2003	Gang Xie	243223US3	2774

22850 7590 10/13/2005

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

GOFF II, JOHN L

ART UNIT PAPER NUMBER

1733

DATE MAILED: 10/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/668,159

Applicant(s)

XIE ET AL.

Examiner

John L. Goff

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Species II, claims 5-8, in the reply filed on 9/23/05 is acknowledged. The traversal is on the ground(s) that the Office has not provided any reasons to support the conclusion of patentable distinctness. This is not found persuasive because Species I directed to Figures 1A-1F is mutually exclusive and patentably distinct of Species II directed to Figures 2A-2E wherein the Figures and the associated method depicted by the Figures differ in a number of mutually exclusive and patentably distinct ways such as Species I specifically requires baking including the electrolyte membrane and Species II specifically requires baking without the electrolyte membrane. It was additionally noted in the restriction requirement that should applicant traverse on the ground that the species are not patentably distinct applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case, which applicant has not.

Furthermore, should the elected species be found allowable the non-elected species will not be rejoined because as noted above the species are mutually exclusive and patentably distinct and applicants have not submitted evidence or clearly admitted otherwise.

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1733

5. Claims 5-8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kunisa et al. (U.S. Patent Application Publication 2002/0098407) as evidenced by Kerr et al. ("New Polyelectrolyte Materials for High-Temperature Fuel Cells").

Kunisa et al. disclose a process for forming an electrode for a fuel cell comprising providing porous gas diffusion layers such as carbon papers or carbon cloths, coating the gas diffusion layers with a mixture of electrolyte polymer having ion conductivity such as NAFION and conductive miniature bodies coated with catalyst such as carbon having platinum supported thereon, baking the coated gas diffusion layers under an inert gas atmosphere without applied pressure at a temperature lower than the thermal decomposition temperature of the electrolyte polymer such as at 120 to 180 °C, sandwiching an electrolyte membrane having ion conductivity between two baked gas diffusion layers, and hot-pressing the layers to form the electrode (Figure 1 and Paragraphs 28, 30, and 47-51). Kunisa et al. do not specifically note the baking occurs at a temperature above the glass transition temperature of the electrolyte polymer. However, as evidenced by Kerr et al. the glass transition temperature of NAFION is 110 to 115 °C such that clearly it is inherent that the baking as taught by Kunisa et al. occurs at a temperature above the glass transition temperature of the electrolyte polymer. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the baking taught by Kunisa et al. at a temperature above the glass transition temperature of the electrolyte polymer as this is the temperature that must be reached to cause the electrolyte polymer to flow and disperse within the porous gas diffusion layer.

Art Unit: 1733

Regarding claim 8, it is noted Kunisa et al. do not specifically note the time for baking is longer than the time for hot-pressing. However, baking as known to one of ordinary skill in the art is a process for causing the electrolyte polymer to flow and disperse within the porous gas diffusion layer as opposed to hot-pressing which is a simple lamination of the baked gas diffusion layers and an electrolyte membrane such that inherently baking would require a longer processing time than hot-pressing. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to experimentally determine the appropriate baking and hot-pressing times as a function of the particular materials in the electrode and the difficulty in dispersing the electrolyte polymer as doing so would have required nothing more than ordinary skill and routine experimentation.

Kerr et al. is applied only as evidence of an inherent property, i.e. the glass transition temperature of NAFION is 110 to 115 °C (See Page 368, Column 1, lines 5-6).

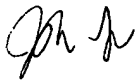
### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **(571) 272-1216**. The examiner can normally be reached on M-F (7:15 AM - 3:45 PM).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1733

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John L. Goff



JEFF H. AFTERGUT  
PRIMARY EXAMINER  
GROUP 1300